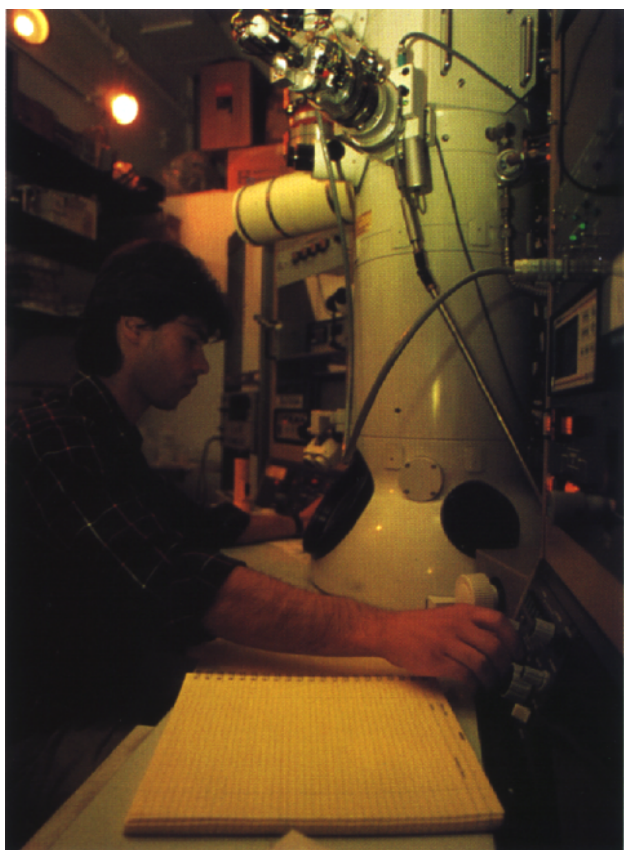


CENTER FOR MICROANALYSIS OF MATERIALS



The Center for Microanalysis of Materials at the University of Illinois at Urbana has over 20 major instruments in four areas: electron microscopy, surface microanalysis, X-ray diffraction, and backscattering spectroscopies.

Access to the Center's instruments is easy and flexible. The Center adjusts the way it works to match the needs of each research project. Researchers can be trained to operate the instruments themselves; they can work with Center staff members; the work can be done by staff members directly;

or staff can act as consultants. The Center's broad range of techniques ensures that research work will use the optimum method – or the optimum combination of techniques.

ACCOMPLISHMENTS

Researchers used several techniques to study the potential of oxide films on gallium arsenide for computer circuitry and to elucidate their structure: transmission electron microscopy, Auger analysis, and secondary ion mass spectroscopy. Together, these techniques led to the discovery that light can be steered around corners in computers.

In many fields of technology, performance is improved if the materials are more finely structured. This makes it hard to investigate the phases, because each region is so small. One important advance in transmission electron microscopy is a technique called convergent-beam diffraction. This technique makes it possible to obtain better information on the crystal structures of materials and to obtain it from smaller regions than earlier techniques. It has important applications in semiconductors, ceramics, steels, rapidly quenched metastable materials, and many others.

The Center developed a unique instrument that permits a sample from an electrochemical cell to be moved directly into an ultra-high vacuum system for surface analysis – without contamination by exposing it to air.

